CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

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- 1. An apparatus for detecting a seal on a film, comprising;
- a force transmitter, disposed to transmit a force from the film;
- a force sensor disposed to receive the transmitted force and provide a force signal in response thereto; and
- a controller, disposed to receive the force signal and provide a seal signal in response thereto.
- 2. The apparatus of claim 1, wherein the force sensor is an acoustic sensor.
- The apparatus of claim 1, wherein the force sensor is a mechanical sensor.
- 4. The apparatus of claim 1, wherein the force sensor is a vibration sensor.
- 5. The apparatus of claim 1, further comprising an anvil disposed on a first side of a film path, wherein the force transmitter is disposed on a second side of the film path.
- 5. The apparatus of claim 1, wherein the force sensor is a piezoelectric sensor.
- 6. The apparatus of claim 5, wherein the force transmitter is a quill disposed near a path of the film.

9		The apparatus of craim o, wherein the quill
4		is rigid.
1		8. The apparatus of claim 7, wherein the quill
2		is comprised of stainless steel.
1		9. The apparatus of claim 6, wherein the quill
2		is angled in a downstream film path direction, relative to
3		normal to the film path.
1		11. The apparatus of claim 10, wherein the quill
2		includes a radius surface abutting the film path, and the
3		quill is held against the film path by a spring force.
<u>"</u>		11. The apparatus of claim 5, wherein the
5		controller includes an amplitude comparator that receives
<u></u> 13		the force signal and an amplitude threshold.
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1		13. The apparatus of claim 5, wherein the
<u>-</u>		controller includes a rise-time comparator that receives th
3		force signal and a rise-time threshold.
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. 기급 :: 기급 :: 기급 :: : : : : : : : : : : :		14. The apparatus of claim 1, wherein the
± ¯ 2		controller includes a window circuit.
_		Conterorier increases a window critary.
1		15. A method for detecting a seal on a film,
2/		comprising;
3		providing a force signal responsive to the
4	(F)	seal; and
5	• .	detecting the force and providing a seal
6.		signal in response thereto.

16. The method of claim 15, further comprising transmitting a force from the film.

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3		17. The method of claim 15, wherein providing the
4		force signal includes detecting an acoustic signal.
1		18. The method of claim 16, wherein providing the
2		force signal includes detecting a mechanical signal.
1		19. The method of claim 16, wherein providing a
2	••	force signal includes sensing a vibration.
1		20. The method of claim 15, further comprising
2		transmitting the force with a quill disposed near a path of
3		the film.
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1		21. The method of claim 15, wherein providing a
I2 		seal signal includes comparing an amplitude of the force
₽		with a threshold.
		22. The method of claim 21, wherein providing a seal signal includes making the comparison during a window.
1	. ·	23. The method of claim 22, wherein providing a
<u>.</u> 2		seal signal includes comparing a rise-time of the force with
<u>-</u> 3		a threshold.
1		24. An apparatus for detecting a seal on a film,
2		comprising;
3	2 W	means for providing a force signal in
4	7000	response to the seal;
5		means for detecting the force signal, coupled
6	V~	to the means for providing a force signal; and
7		means for providing a seal signal in response
8		to the force signal, coupled to the means for
9		detecting.

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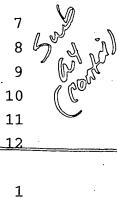
1		25. The apparatus of claim 24, further comprising
2		means for transmitting a force from the film to the means
3		for detecting, coupled to the means for detecting.
1	•	26. The apparatus of claim 25, wherein the means
2		for detecting includes means for detecting an acoustic
3		signal.
1	· ·	27. The apparatus of claim 25, wherein the means
2		for detecting includes means for detecting a mechanical
3	:	signal.
		28. The apparatus of claim 25, wherein the means for detecting includes means for detecting a vibration signal.
		29. The apparatus of claim 25, wherein the means for providing a seal signal includes means for comparing an amplitude of the force with a threshold. 30. The apparatus of claim 29, wherein the means for providing a seal signal includes means for making the comparison during a window.
1		31. The apparatus of claim 30, wherein the means
2	,	for providing a seal signal includes means for comparing a
3		rise-time of the force with a threshold.
1		32. A bag machine, comprising;
2 -	η_{\sim}	forgo transmittor disposed to transmit

a force transmitter, disposed to transmit a force responsive to a seal;

a force sensor disposed to receive the transmitted force and provide a force signal in response thereto;

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at least one upstream processing device,
located upstream of the force transmitter;
at least one downstream processing device,
located downstream of the force transmitter; and
a controller, disposed to receive the force
signal and provide a seal signal in response thereto.

- 33. The apparatus of claim 32, wherein the force sensor is a mechanical sensor.
- 34. The apparatus of claim 32, further comprising an anvil disposed on a first side of a film path, wherein the force transmitter is disposed on a second side of the film path.
- 35. The apparatus of claim 34, wherein the force sensor is a piezoelectric sensor.
- 36. The apparatus of claim 35, wherein the force transmitter is a quill disposed near a path of the film.
- 37. The apparatus of claim 36, wherein the quill is angled downstream.
- 38. The apparatus of claim 37, wherein the quill includes a radius surface abutting the film path, and the quill is held against the film path by a spring force.
- 39. The apparatus of claim 38, wherein the controller includes a window circuit.
- 40. The apparatus of claim 32, wherein one of the at least one downstream devices is registered to the seal.

1		41. The apparatus of claim 40, wherein one of the
2		at least one downstream devices includes a knife.
1		42. The apparatus of claim 40, wherein one of the
2		at least one downstream devices and the force transmitter
3		are in a common tension zone.
1	and the second second	43. A method for processing a bag, comprising;
2		transporting the film from a first processing
2	10	device to a seal sensing location;
ر ا	N	providing a force signal responsive to the
	747	seal at the seal sensing location;
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= 0	V	detecting the force and providing a seal
Ω/ Πο		signal in response thereto;
_8 	•	transporting the film to a second processing
<u> </u>		device.
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<u>_</u> 1		44. The method of claim 43, further comprising
2		transmitting a force from the film.
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L 1		45. The method of claim 44, wherein providing the
<u></u> 2.	-	force signal includes detecting a mechanical signal.
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1		46. The method of claim 43, wherein providing a
2		seal signal includes comparing an amplitude of the force
3.		with a threshold.
1		47. The method of claim 46, wherein providing a
2		seal signal includes making the comparison during a window.
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1	٠	48. The method of claim 43, wherein providing a
2	• -	seal signal includes comparing a rise-time of the force with
٠, ك	•	a threshold.
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